Thermolyne

Barnstead|Thermolyne Corporation

Type F62700
Furnace
OPERATION MANUAL AND PARTS LIST
Series 627

Model No.	Voltage	Control	Display (°C or °F)
F62730	240V	Single Set Point	°C
F62730-26	230V	Single Set Point	°C
F62734	100V	Single Set Point	°C
F62735	120V	Single Set Point	°C

LT627X1 • 12/5/00

Serial Number: _____

IMPORTANT INFORMATION

This manual contains important operating and safety information. The user must carefully read and understand the contents of this manual prior to the use of this equipment.

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Safety Information

Your Thermolyne furnace has been designed with function, reliability, and safety in mind. It is the user's responsibility to install it in conformance with local electrical codes. For safe operation, please pay attention to the alert boxes throughout the manual.

Alert Boxes

WARNING
Warning alerts apply when there is a possibility of personal injury.

CAUTION
Caution alerts apply when there is a possibility of damage to the equipment.

NOTE
Notes alert the manual user to pertinent facts and conditions.

Warnings

WARNING

To avoid electrical shock, this furnace must:

1. Use a properly grounded electrical outlet of correct voltage and current handling capacity.
2. Disconnect from the power supply prior to maintenance and servicing.
3. Have the door switch operating properly.

To avoid burns, this furnace must:

1. Not be touched on the exterior or interior surfaces during use or for a period of time after use.

To avoid personal injury:

1. Do not use in the presence of flammable or combustible materials ; fire or explosion may result. This device contains components which may ignite such material.
2. Refer servicing to qualified personnel.
3. THIS FURNACE CONTAINS REFRACTORY CERAMIC INSULATION WHICH CAN PRODUCE RESPIRABLE FIBERS AND DUST WHEN HANDLED. THESE FIBERS CAN CAUSE IRRITATION AND CAN AGGRAVATE PRE-EXISTING RESPIRATORY DISEASE. THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) HAS CLASSIFIED REFRACTORY CERAMIC FIBER AS POSSIBLY CARCINOGENIC.
   AFTER SERVICE REFRACTORY CERAMIC FIBER DUST MAY CONTAIN CRYSTALLINE SILICA, WHICH MAY CAUSE LUNG DAMAGE (SILICOSIS) AND WHICH HAS BEEN CLASSED BY IARC AS A PROBABLE CARCINOGEN.
   The refractory ceramic materials are located in the door, the hearth collar bricks, and in the chamber of the furnace. Tests performed by the manufacturer indicate that there is no significant risk of exposure to dust or respirable refractory ceramic fiber resulting from operation of the equipment under normal conditions. However, there may be a risk of exposure to respirable refractory ceramic dust or fiber when repairing or maintaining the insulating materials, or when otherwise disturbing the materials in a manner which causes release of dust or fibers therefrom. Through the use of proper handling procedures you can work safely with these insulating materials and minimize any exposure. Accordingly, before you repair or replace any insulating materials, or perform any other servicing on this product which could disturb or cause exposure to dust from insulating materials, you should consult the appropriate Material Safety Data Sheets (MSDS's) for such products with respect to proper handling and appropriate protective equipment. For additional MSDS's, or additional information concerning the handling of refractory ceramic products, please contact the Customer Service Department of Barnstead/Thermolyne Corporation.

Introduction

Intended Use

The Type F62700 furnace is a general laboratory and heat treating furnace. For optimum element life, it is suggested that this furnace be used for applications requiring temperatures from 400°F (204°C) to 1600°F (871°C) for continuous use, or temperatures from 1600°F (871°C) to 1832°F (1000°C) for intermittent use. Continuous use is operating the furnace for more than 3 hours and intermittent use is operating the furnace for less than 3 hours.

The unit consists of: 1) muffle heating chamber, 2) a single set point P.I.D. microprocessor control and 3) a door interlock relay for user safety.

Principles of Operation

The furnace chamber incorporates a heating element that is embedded into the side walls and top and back of heating chamber. The ceramic fiber oval muffle with four heating surfaces creates even heat distribution within the chamber. The temperature is controlled by a single set point microprocessor control with a type K Chromel/Alumel Thermocouple. A fan is provided in the furnace to provide forced air cooling for the temperature controller. A door safety switch removes power to the heating elements whenever the furnace door is opened.

Single Set Point Temperature Controller

The furnace controller is a single set point control which enables the user to bring the furnace up to a pre-set point and hold the temperature.

Figure 1
Controller

General Specifications

MODEL NUMBERS		F62730	F62730-26	F62734	F62735
OVERALL DIMENSIONS IN. (CM.)	WIDTH	23-1/2 (59.7 CM)	23-1/2 (59.7 CM)	23-1/2 (59.7 CM)	23-1/2 (59.7 CM)
	HEIGHT	16-1/4 (41.3 CM)	16-1/4 (41.3 CM)	16-1/4 (41.3 CM)	16-1/4 (41.3 CM)
	DEPTH	18-3/4 (47.6 CM)	18-3/4 (47.6 CM)	18-3/4 (47.6 CM)	18-3/4 (47.6 CM)
CHAMBER DIMENSIONS IN. (CM.)	WIDTH	11-1/2 (29.2 CM)	11-1/2 (29.2 CM)	11-1/2 (29.2 CM)	11-1/2 (29.2 CM)
	HEIGHT	7-1/2 (19.1 CM)	7-1/2 (19.1 CM)	7-1/2 (19.1 CM)	7-1/2 (19.1 CM)
	DEPTH	11-1/2 (29.2 CM)	11-1/2 (29.2 CM)	11-1/2 (29.2 CM)	11-1/2 (29.2 CM)
WEIGHT	LBS. (KG)	55 LBS (25 KG)	55 LBS (25 KG)	55 LBS (25 KG)	55 LBS (25 KG)
ELECTRICAL RATINGS	VOLTS	240	230	100	120
	AMPS	6.2	6.4	14.8	12.4
	WATTS	1488	1488	1488	1488
	FREQ.	50/60	50/60	50/60	50/60
	PHASE	1	1	1	1
OPERATING TEMP.	CONT.	1600°F (871°C)	1600°F (871°C)	1600°F (871°C)	1600°F (871°C)
	INTER-MITTENT	1832°F (1000°C)	1832°F (1000°C)	1832°F (1000°C)	1832°F (1000°C)

Unpackaging

Visually check for any physical damage to the shipping container. Inspect the equipment surfaces that are adjacent to any damaged area. Open the furnace door and remove packing material from inside the furnace chamber. Vacuum the chamber prior to use to remove the insulation dust due to shipping.

The furnace is supplied with two hearth plates. Place the hearth plates on the bottom of the chamber.

Install ceramic sleeve into top vent hole on furnace case.

Retain the original packaging material if re-shipment is foreseen or required.

Installation

Site Selection:

Install furnace on a sturdy surface and allow adequate space for ventilation.

CAUTION

Be sure ambient temperature does not exceed 104°F (40°C). Ambients above this level may result in damage to the controller.

Allow at least six inches of space between the furnace and any combustible surface. This permits the heat from the furnace case to escape so as not to create a possible fire hazard.

The electrical specifications are located on the specification plate on the back of the furnace. Consult Barnstead/Thermolyne if your electrical service is different than those listed on the specification plate. Prior to connecting your Type F62700 furnace to your electrical supply, be sure the front power switch is in the “OFF” position.

WARNING

To avoid electrical shock, this furnace must be installed by a competent, qualified electrician who insures compatibility among furnace specification, power source and ground code requirements.

Observe These Warnings Before Operating Your Furnace:

WARNING

Do not use in the presence of flammable or combustible chemicals. Fire or explosion may result; this device contains components which may ignite such materials.

WARNING

To avoid burns, this furnace must not be touched on the exterior or interior furnace surfaces during use or for a period of time after use.

Operation

Single Set Point Temperature Control (Automatic)

This furnace controller consists of a microprocessor based three-mode (Proportional, Integral, Derivative), single setpoint temperature controller. The controller features programmable overtemperature protection and thermocouple break protection.

NOTE

The temperature control in these models is a single set-point device. By using the "up" or "down" push buttons a specific temperature can be chosen. The control will cause the furnace chamber to heat to the chosen temperature and hold it at this temperature until you turn off the power switch or select another temperature.

Power Switch:

Switch power switch to the "ON" position. The switch will illuminate when power is on.

FAN:

The fan located in the rear of the control section, will run continuously as long as power is supplied to the furnace, even when the furnace power switch is OFF. This serves to remove residual heat after the furnace is turned OFF so the heat does not cause damage to sensitive electronic components.

CAUTION

If the power supply must be disconnected from the furnace at any time be sure the chamber temperature is 500°C or less before doing so.

Cycle Indicator:

The amber “OP” cycle light will illuminate whenever the power is being applied to the elements. (See Figure 1, page 4)

Door Safety Switch:

The door safety switch removes power from the heating elements when the door is opened. Open and close door a few times, note that the amber cycle light will go out while the door is open. If this condition is not true, consult the trouble shooting section before proceeding.

WARNING

To avoid electrical shock, this furnace must have the door switch operating properly.

Digital Readout:

The Digital Readout continuously displays chamber (upper display) and set point (lower display) temperatures unless the scroll button is depressed.

Initial Startup:

When the power switch is turned on the controller will perform a self-test to make sure controller is operating properly. (If all four 1's do not light up or fails to go to "8888" contact Thermolyne.)

Adjustment of Parameters: (See Figure 1, page 4)

To illuminate down ▼ button, scroll button, and up ▲ button, touch anywhere on front panel.

Set Point Temperature:

Push up ▲ button or down ▼ button, to modify temperature set point (lower digital display).

NOTE

When performing the following steps remember that if more than eight to ten seconds elapse before the buttons are used again, the display screen will automatically switch back to displaying chamber temperature. If this happens, light up the front panel again and step through each parameter until you reach the point at which the interruption occurred. The parameter values you checked earlier, however, will not be lost or altered. Holding down on the scroll button allows longer viewing time.

CAUTION

Do not exceed limitations for continuous or intermittent operating temperature shown in the General Specifications. Exceeding these limits will result in severely reduced heating element life.

Temperature Indication:

Push scroll button once, "°C" will appear. This indicates temperature measurement. (Contact Thermolyne if control needs to be changed to °F.)

Tuning:

This control incorporates a self tuning feature which determines the optimum control parameters for the best temperature accuracy.

Push scroll button until "tunE" appears. To start tuning function push ▲ button. To stop tuning function push ▼ button.

When the tuning process is started the lower display will flash "tunE" along with the furnace temperature set point. During tuning the temperature set point cannot be changed. To change temperature set point "tunE" must be turned "OFF".

NOTE

If the power to the furnace is "turned off" or interrupted while in "tuning," upon return of power to the furnace, the controller display will indicate "LINE FAIL" because sampled data could be questionable. To restart tuning, refer to "Tuning" procedure.

If the controller cannot maintain temperature set point "tunE FAIL" will appear on display. First, correct problem for not maintaining temperature set point, then restart "tuning" procedure.

High Alarm (Over Temperature Protection OTP):
Push scroll button until “AL.SP” (Alarm Set Point) appears. The lower display should indicate 1010°C.

NOTE

HiAL- HIGH ALARM. (over-temperature protection, OTP)

The controller is fitted with a mechanical relay which is de-energized in the alarm mode. This relay, when de-energized, removes power from the heating elements. If the primary control circuit fails, the OTP will control the furnace temperature at the preset value you have entered. It does not shut off the furnace, but will maintain the chamber temperature at that value.

Depress either the “UP” or “DOWN” push button to select the OTP value you desire. Thermolyne recommends that you set the value either at the maximum operating temperature of the furnace or a value of 20 degrees above your working temperature if you desire to provide protection for your workload.

Furnace Loading:

1. For best results use only the center 2/3 of the furnace chamber.

CAUTION

Do not overload your furnace chamber. If the load is to be heated uniformly it should not occupy more than the center two-thirds of the furnace chamber. Failure to observe this caution could result in damage to furnace components.

2. If you are heating a number of small parts, spread them throughout the center two-thirds of the furnace chamber.
3. Keep objects away from thermocouple.
4. Use insulated tongs and mittens when loading and unloading furnace.
5. Always wear safety glasses.
6. Use the hearth plates supplied to protect bottom of chamber. Part # PH421X1.
7. Do not exceed a load of 25 lbs. in the furnace chamber.

Preventative Maintenance

WARNING

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AFTER SERVICE REFRACTORY CERAMIC FIBER DUST MAY CONTAIN CRYSTALLINE SILICA, WHICH MAY CAUSE LUNG DAMAGE (SILICOSIS) AND WHICH HAS BEEN CLASSED BY IARC AS A PROBABLE CARCINOGEN.

The refractory ceramic materials are located in the door, the hearth collar bricks, and in the chamber of the furnace. Tests performed by the manufacturer indicate that there is no significant risk of exposure to dust or respirable refractory ceramic fiber resulting from operation of the equipment under normal conditions. However, there may be a risk of exposure to respirable refractory ceramic dust or fiber when repairing or maintaining the insulating materials, or when otherwise disturbing the materials in a manner which causes release of dust or fibers therefrom. Through the use of proper handling procedures you can work safely with these insulating materials and minimize any exposure. Accordingly, before you repair or replace any insulating materials, or perform any other servicing on this product which could disturb or cause exposure to dust from insulating materials, you should consult the appropriate Material Safety Data Sheets (MSDS's) for such products with respect to proper handling and appropriate protective equipment. For additional MSDS's, or additional information concerning the handling of refractory ceramic products, please contact the Customer Service Department of Barnstead/Thermolyne Corporation.

REFER SERVICING TO QUALIFIED PERSONNEL.

WARNING

Disconnect from the power supply prior to maintenance and servicing.

Refer servicing to qualified personnel.

This unit is equipped with a venting system on the top of the furnace. This is for the removal of fumes from the chamber of the unit. Contamination is a major cause of element failure, therefore, when possible remove the fume forming material before heating. (e.g., cleaning cutting oil from tool steel.)

Housekeeping is vital to your electric furnace - KEEP IT CLEAN. Run your furnace up to 1600°F empty occasionally to burn off the contamination that may exist on the insulation and elements. Maintain 1600°F for at least 4 hrs. to insure complete ashing of foreign materials.

Element life is reduced somewhat by repeated heating and cooling. If the furnace is to be used again within a few hours, it is best to keep it at the operating temperature or at a reduced level such as 500°F (260°C).

Troubleshooting

The Troubleshooting section is intended to aid in defining and correcting possible service problems. When using the chart, select the problem category that resembles the malfunction; then proceed to the possible causes category and take necessary corrective action.

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
The power light does not illuminate.	The furnace is not connected to power supply.	Check furnace connection to power source.
	ON and OFF power switch defective.	Replace power switch.
The furnace does not heat.	No power.	Check power source and fuses or breakers.
	Thermocouple is open or thermocouple leads reversed. “SnSr FAIL” will be displayed on screen.	Replace thermocouple or check thermocouple connections.
	Controller malfunction. “EE FAIL” will be displayed on screen.	Verify and correct all parameters and configuration values. If “EE FAIL” persists, replace control.
	Element burned out. “LP.Br” will be displayed on screen.	Replace muffle (element).
	Solid state relay defective.	Replace solid state relay.
	Door switch malfunction.	Re-align or replace door switch.
Slow heatup.	Low line voltage.	Install line of sufficient size and proper voltage. (Isolate furnace from other electrical loads.)
	Heavy load in chamber.	Lighten load in chamber to allow heat to circulate.
	Wrong heating element.	Install proper element.
	Wired improperly.	Check wiring diagram for correct wiring of your furnace.
	One side of element is burned out on 120V or 100V unit.	Replace muffle (element).

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
Door switch does not cut power to heating elements.	Door switch is not functioning.	Re-align or replace door safety switch.
Repeated element burnout.	Heating harmful materials.	Clean up spills in and on chamber. Ventilate chamber by leaving top vent slightly open when heating known harmful reagents.
	Wrong element.	Install proper element.
	Oxidized thermocouple.	Replace thermocouple.
	Contamination present from previous burnout.	Clean and/or replace insulation material.
	Wired improperly.	Check wiring diagram for correct wiring of your furnace.
Inaccurate temperature readout.	Oxidized or contaminated thermocouple.	Replace thermocouple.
	Poor thermocouple connection.	Tighten connections.
	Solid state relay malfunction.	Replace solid state relay.
	Improper loading procedures.	Use proper loading procedures.
	Poor ventilation of base.	Clear area around furnace base.
	Control out of calibration.	Contact Barnstead/Thermolyne.
	Thermocouple connections reversed.	Reconnect thermocouple correctly.
	P.I.D. values invalid.	Re-tune control.
	Control malfunction. “EE FAIL” will be displayed on screen.	Verify and correct all parameter and configuration values. If “EE FAIL” persists, replace control.

Maintenance and Servicing

WARNING

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REFER SERVICING TO QUALIFIED PERSONNEL.

WARNING

Disconnect from the power supply prior to maintenance and servicing.

Refer servicing to qualified personnel.

NOTE

Perform only maintenance described in this manual. Contact an authorized dealer or our factory for parts and assistance.

Thermocouple Replacement (Type K)

a. Disconnect from power supply.
b. Set furnace on its door.
c. Remove (one piece) top, back and bottom cover.
d. Remove retaining clip from the thermocouple and pull the thermocouple straight out from the chamber.
e. Disconnect thermocouple lead ends from back of the controller and remove the thermocouple.
f. Reinstall thermocouple by reversing steps A thru E.

NOTE

Make sure yellow thermocouple lead wire is connected to terminal #9 on back of the controller.

Make sure red thermocouple lead wire is connected to terminal #10 on back of the controller.

Make sure the exposed section of the T/C lead wires are not contacting each other.

Muffle (Heating Element) Replacement

a. Disconnect from power supply.
b. Set furnace on its door.
c. Remove (one piece) top, back and bottom cover.
d. Disconnect element lead wires from door switch. (Note placement and connection of wires to door switch.)
e. Remove clip from thermocouple and pull thermocouple out of muffle.
f. Remove metal retaining band from defective muffle.
g. Loosen top adjustment bracket and remove defective muffle.
h. Insert new muffle with vent hole facing the top of unit.
i. Readjust top bracket to fit snugly up against muffle. Make sure muffle is laying flush against front case section.
j. Reinstall metal retaining band and tighten until muffle seats firmly into case section.
k. Reconnect element lead wires to door switch.

On the 120V or 100V muffle there are three element lead wires. Connect the top and the bottom element lead wire to the top terminal connector on the door switch. Connect the middle element lead wire to the bottom terminal connection on door switch.

On the 230V and 240V muffles there are two element lead wires. Connect the top element lead wire to the top terminal connector on door switch. Connect the bottom element lead wire to bottom terminal connector on the door switch.

NOTE

Make sure the black insulation sleeving covers the exposed portion of the element lead wires.

l. Reinstall the thermocouple and the retaining clip.

NOTE

Make sure the exposed section of the T/C lead wires are not contacting each other.

m. Reinstall the cover section.
n. Set the furnace upright and test the operation of the furnace.

Diagram Component List

REF. NO.	DESCRIPTION	MODEL NO. AND OUR PART NO. (s)			
		F62730	F62730-26	F62734	F62735
CN1	CONTROL, ELECTRIC	CN71X45	CN71X45	CN71X45	CN71X45
B1	FAN	FAX4	FAX4	FAX3	FAX3
DS1	Pilot light	PLX104	PLX104	PLX103	PLX103
HR1, HR2	HEATING ELEMENT	EL627X2A	EL627X2A	EL627X3A	EL627X1A
RY1	RELAY, MECHANICAL, O.T.P.	RYX57	RYX57	RYX56	RYX56
RY2	RELAY, SOLID STATE	RYX34	RYX34	RYX34	RYX34
S1	SWITCH	SWX124	SWX124	SWX123	SWX123
S2	SWITCH, MICRO 20 AMP.	SW627X1A	SW627X1A	SW627X1A	SW627X1A
TB1	TERMINAL BLOCK	TRX77	TRX77	TRX77	TRX77
TC1	THERMOCOUPLE	TC517X1A	TC517X1A	TC517X1A	TC517X1A

Wiring Diagram F62700
120V, 100V, 230V, 240V

Note: On F62730-26, "BLK" wire is Brown; "WHT" wire is Blue.

Replacement Parts List

Listed below are the common replacement parts for all models of the F62700 furnace.

PART	PART NO.
Temperature Control	CN71X45
Muffle Heating Element 100V	EL627X3A
Muffle Heating Element 120V	EL627X1A
Muffle Heating Element 230V, 240V	EL627X2A
Solid State Relay	RYX34
Mechanical Relay (OTP) 120V, 100V	RYX9
Mechanical Relay (OTP) 230V & 240V	RYX10
On/Off Switch 120V	SWX123
On/Off Switch 230V & 240V	SWX124
Fan 120V, 100V	FAX3
Fan 230V & 240V	FAX4
Door Switch	SW627X1A
Thermocouple	TC517X1A
Door Insulation	JC517X1
Hearth Plate (2 required)	PH421X1
Pilot light, 100V & 120V	PLX103
Pilot light, 230V & 240V	PLX104
Door Assembly, with insulation	DR627X1B

Ordering Procedures

Please refer to the Specification Plate for the complete model number, serial number, and series number when requesting service, replacement parts or in any correspondence concerning this unit.

All parts listed herein may be ordered from the **Barnstead|Thermolyne** dealer from whom you purchased this unit or can be obtained promptly from the factory. When service or replacement parts are needed we ask that you check first with your dealer. If the dealer cannot handle your request, then contact our Customer Service Department at 319-556-2241 or 800-553-0039.

Prior to returning any materials to **Barnstead |Thermolyne Corp**., please contact our Customer Service Department for a "Return Goods Authorization" number (RGA). Material returned without a RGA number will be refused. Minimum invoice: $25.

Thermal Ceramics — Material Safety Data Sheet

Date Revised: 7/2/91

PRODUCT IDENTIFICATION

Trade Name(s): CERAFIBER
Generic Name: REFRACTORY CERAMIC FIBER INSULATION
Chemical Name: ALUMINA SILICA
Manufacturer: Thermal Ceramics
Address: P.0. BOX 923, 2102 Old Savannah Road
City: Augusta **State:** Georgia **Zip:** 30903

CAS #: 65997-17-3
Formula: MIXTURE
Telephone: (404) 796-4200

PRODUCT INGREDIENTS

INGREDIENT NAME	CAS NUMBER	%	PEL and TLV (except as noted)
REFRACTORY CERAMIC FIBER	65997-17-3	100	1 FIBER/CC EXPOSURE GUIDELINE 5mg/M^3 - NUISANCE RESPIRABLE - OSHA 10mg/M^3 - NUISANCE TOTAL - ACGIH
CRYSTALLINE SILICA (CRISTOBALITE) WILL FORM "AFTER SERVICE" AT TEMPERATURES >1000°C.	14464-46-1	>20	0.05 mg/M^3 - OSHA Respirable Dust

PHYSICAL DATA

Appearance and Odor: WHITE FIBER-NO ODOR.

Boiling Point:	NA	**Evaporation Rate (NA = 1):**	NA
Vapor Pressure:	NA	**Specific Gravity (water = 1):**	2.6
Water Solubility (%):	NIL	**Melting Point:**	>3000°F
Vapor Density (Air= l):	NA	**% Volatile by Volume:**	0

FIRE AND EXPLOSION DATA

Flash Point (Method): NONFLAMMABLE **Flammable Limits:** **LEL:** NA % **UEL:** NA %
NFPA Flammable/Combustible Liquid Classification: NA **Auto-Ignition Temperature:** NA

HEALTH HAZARDS

Summary/Risks

Summary: EXPOSURE TO DUST FROM THIS PRODUCT SHOULD BE MINIMIZED. ANIMAL INHALATION AND ARTIFICIAL IMPLANTATION STUDIES HAVE REPORTED THE DEVELOPMENT OF TUMORS. BASED ON PRELIMINARY RESULTS, A NOTICE OF SUBSTANTIAL RISK HAS BEEN FILED WITH THE EPA ACCORDING TO SECTION 8(e) OF THE TOXIC SUBSTANCES CONTROL ACT. BASED ON ANIMAL STUDIES, IARC HAS CLASSIFIED RCF AS POSSIBLY CARCINOGENIC FOR HUMANS (2B). DATA FROM HUMAN EPIDEMIOLOGICAL STUDIES IS INSUFFICIENT. THIS SUBSTANCE OR MIXTURE HAS NOT BEEN CLASSIFIED A CARCINOGEN BY NTP OR OSHA.

Medical conditions which may be aggravated: AS WITH ANY DUST, PRE-EXISTING UPPER RESPIRATORY AND LUNG DISEASES MAY BE AGGRAVATED.

Target Organ(s): LUNGS, SKIN AND EYES .

Acute Health Effects: PRODUCT IS A MECHANICAL IRRITANT TO SKIN, EYES AND UPPER RESPIRATORY SYSTEM.

Chronic Health Effects: EXCESSIVE EXPOSURE TO RCF DUSTS AND AFTER SERVICE FIBERS MAY CAUSE LUNG DAMAGE (FIBROSIS). IARC STATES THERE IS SUFFICIENT EVIDENCE IN ANIMALS AND LIMITED EVIDENCE IN HUMANS TO CLASSIFY CRYSTALLINE SILICA AS A PROBABLE CARCINOGEN (2A) AND RCF AS A POSSIBLE CARCINOGEN (2B).

Primary Entry Route(s): INHALATION, SKIN AND EYE CONTACT.

Signs/Symptoms of Overexposure

Inhalation: IRRITATION OR SORENESS IN THROAT & NOSE. IN EXTREME EXPOSURES SOME CONGESTION MAY OCCUR.

Skin Contact: TEMPORARY IRRITATION OR RASH.

Skin Absorption: NA

Ingestion: NOT HAZARDOUS WHEN INGESTED. MAY CAUSE TEMPORARY IRRITATION TO GI TRACT.

Eyes: TEMPORARY IRRITATION OR INFLAMMATION

First Aid/Emergency Procedures

Inhalation: REMOVE TO FRESH AIR. DRINK WATER TO CLEAR THROAT AND BLOW NOSE TO EVACUATE FIBERS.

Skin Contact: WASH AFFECTED AREAS GENTLY WITH SOAP AND WARM WATER.

Skin Absorption: NA

Ingestion: NA

Eyes: FLUSH EYES WITH COPIOUS QUANTITIES OF WATER. IF IRRITATION PERSISTS CONSULT A PHYSICIAN.

REACTIVITY DATA

MATERIAL IS STABLE. HAZARDOUS POLYMERIZATION CANNOT OCCUR.

Chemical Incompatibilities: HYDROFLUORIC ACID

Conditions to Avoid: NONE IN DESIGNED USE.

Hazardous Decomposition Products: NONE

SPILL OR LEAK PROCEDURES

Procedures for Spill/Leak: VACUUM CLEAN DUST WITH EQUIPMENT FITTED WITH HEPA FILTER. IF SWEEPING IS NECESSARY USE A DUST SUPPRESSANT.

Waste Management: WASTES ARE NOT HAZARDOUS AS DEFINED BY RCRA (40 CFR PART 261) . COMPLY WITH FEDERAL, STATE & LOCAL REGULATIONS. METHOD OF DISPOSAL - LANDFILL. RQ - N/A.

SPECIAL PROTECTION INFORMATION

Goggles: GOGGLES OR SAFETY GLASSES WITH SIDE SHIELDS ARE RECOMMENDED.

Gloves: GLOVES ARE RECOMMENDED.

Respirator: <1 F/CC, USE 3M 9900; <10 F/CC, USE MSA COMFO II WITH H FILTER; <50 F/CC, USE MSA ULTRA-TWIN H FILTER; OR EQUIVALENTS. SEE SECTION IX-OTHER.

Ventilation: USE SUFFICIENT NATURAL OR MECHANICAL VENTILATION TO KEEP DUST LEVEL TO BELOW PEL/TLV/WEG (WORKPLACE EXPOSURE GUIDELINE) USE DUST COLLECTION WHEN TEARING OUT.

Other: WEAR LOOSE FITTING, LONG SLEEVED CLOTHING. WASH EXPOSED AREAS WITH SOAP & WARM WATER AFTER HANDLING. WASH WORK CLOTHES SEPARATELY FROM OTHER CLOTHING; RINSE WASHER THOROUGHLY.

Special Considerations for repair/maintenance of contaminated equipment: CRISTOBALITE RESPIRATOR: <10X PEL, USE 3M 9900; <100X PEL, USE MSA ULTRA-TWIN H FILTER; OR EQUIV. SEE SEC IX-OTHER.

SPECIAL PRECAUTIONS

***** ALWAYS SEGREGATE MATERIALS BY MAJOR HAZARD CLASS *****

THIS PRODUCT CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Storage Segregation Hazard Classes: IRRITANT

Special Handling/Storage: KEEP MATERIAL DRY.

Special Workplace Engineering Controls: ADEQUATE VENTILATION TO KEEP DUST LEVEL TO BELOW PEL/TLV/WEG (WORKPLACE EXPOSURE GUIDELINE).

Other: ADDITIONAL INFORMATION ON THE HEALTH AND SAFETY ASPECTS OF REFRACTORY CERAMIC FIBERS IS AVAILABLE.

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As of the date of preparation of this document, the foregoing information is believed to be accurate and is provided in good faith to comply with applicable federal and state law(s). However, no warranty or representation with respect to such information is intended or given.

MSDS/MSD3 FORM REV. 7/2/91

Barnstead|Thermolyne
One Year Limited Warranty

Barnstead|Thermolyne Corporation warrants that if a product manufactured by **Barnstead|Thermolyne** and sold by it within the continental United States or Canada proves to be defective in material or workmanship, it will provide you, without charge, for a period of ninety (90) days, the labor, and a period of one (1) year, the parts, necessary to remedy any such defect. Outside the continental United States and Canada, the warranty provides, for one (1) year, the parts necessary to remedy any such defect. The warranty period shall commence either six (6) months following the date the product is sold by **Barnstead|Thermolyne** or on the date it is purchased by the original retail consumer, whichever date occurs first.

All warranty inspections and repairs must be performed by and parts obtained from an authorized **Barnstead|Thermolyne** dealer or **Barnstead|Thermolyne**. Heating elements, however, because of their susceptibility to overheating and contamination, must be returned to our factory, and if, upon inspection, it is concluded that failure is not due to excessive high temperature or contamination, warranty replacement will be provided by **Barnstead|Thermolyne**. The name of the authorized **Barnstead|Thermolyne** dealer nearest you may be obtained by calling 1-800-446-6060 or writing to:

Barnstead|Thermolyne
P.O. Box 797
2555 Kerper Boulevard
Dubuque, IA 52004-0797
FAX: (319) 556-0695

Barnstead|Thermolyne's sole obligation with respect to its product shall be to repair or replace the product. Under no circumstances shall it be liable for incidental or consequential damage.

THE WARRANTY STATED HEREIN IS THE SOLE WARRANTY APPLICABLE TO **BARNSTEAD|THERMOLYNE** PRODUCTS. **BARNSTEAD|THERMOLYNE** EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR USE.

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